ABSTRACT OF THE DISCLOSURE

A lensless optical servo system (100) has an unfocused light source (102) and patterned photodetectors (104, 106, 108). The unfocused light is reflected by the markings on an LS-120 disk (40) and the reflected light carries the pattern of the markings the considerable distance in its far-field to the photodetectors (104, 106, 108). The convolution of this light pattern and a mating geometric pattern (110, 112, 114) on the photodetectors (104, 106, 108) causes the photodetectors to generate signals representing the position of the track on the disk. According to a presently preferred embodiment, a laser diode (102) and three detectors (104, 106, 108) are formed on the same silicon substrate (101). Sinusoidal metalization (110, 112, 114) is applied to the detectors (104, 106, 108) in the radial direction. The period of the sinusoidal metalization is two times the tracking pitch of the disk radially and tangentially. The metalization on the first detector is approximately ninety degrees behind the metalization on the second detector and the metalization on the third detector is approximately ninety degrees ahead of the metalization on the second detector. Preferably, each detector (104, 106, 108) is provided with two sinusoidal patterns (110a, 110b, 112a, 112b, 114a, 114b), approximately one hundred eighty degrees out of phase with each other, and spaced apart in the tangential direction.